

IN-SITU REAL-TIME MONITORING TECHNIQUE AND APPARATUS FOR  
ENDPOINT DETECTION OF THIN FILMS DURING CHEMICAL/MECHANICAL  
POLISHING PLANARIZATION

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ABSTRACT

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A technique and apparatus is disclosed for the optical monitoring and measurement of a thin film (or small region on a surface) undergoing thickness and other changes while it is rotating. An optical signal is routed from the monitored area through the axis of rotation and decoupled from the monitored rotating area. The signal can then be analyzed to determine an endpoint to the planarization process. The invention utilizes interferometric and spectrophotometric optical measurement techniques for the in situ, real-time endpoint control of chemical-mechanical polishing planarization in the fabrication of semiconductor or various optical devices. The apparatus utilizes a bifurcated fiber optic cable to monitor changes on the surface of the thin film.

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